

and in recent times due attention has begun to be devoted to this condition, since it can be of great influence on the manufacturing costs.

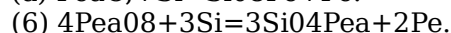
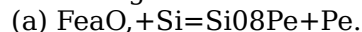
The foregoing remarks exhaust in principle the phenomena which are involved in the employment of oxygen from ores. The peculiarities in the reduction of iron ores, under the conditions ruling in the open-hearth furnace make, nevertheless, necessary a closer investigation of the details of the reactions taking place.

When compelled to resort mainly to regular employment of additions of ore, the requisite quantity of ore becomes so large that one is never in the position to cover it by means of the artificially produced oxides, such as hammer scale. One must always resort to natural iron ores. Further, since the greatest purity (especially freedom from silica) is a necessity, and this condition is usually fulfilled only by those iron ores which consist in the main of iron peroxide, in what follows iron peroxide Fe_2O_3 will be the subject of discussion as the reagent.

(a) REACTIONS BETWEEN IRON PEROXIDE AND THE REDUCING AGENTS IN IRON, AND IRON PEROXIDE REQUIREMENT FOR ELIMINATION OF THE SAME.

1. Iron Peroxide and Silicon.

If iron peroxide acts on silicon in molten iron, the resultant silica, exactly as by the action of iron protoxide, takes up a portion of the reagent, and the reaction can take place according to the formulae



then according to b

1 per cent. Si requires 7-62 per cent. Fe_2O_3 (63).

2. Iron Peroxide and Phosphorus.

Phosphoric acid can only be formed if the conditions admit of its combining with FeO , and therefore the equation of the reaction must run thus :—

